Amendments to the claims

1. (Currently Amended) A method of processing a workpiece, comprising:

providing a <u>historical</u> database ~~that can be filtered into subgroups~~ of operational

data gathered from previously processed workpieces, <u>wherein the operational data is</u>

<u>unrelated to the processing of the workpiece and wherein the operational data can be</u>

<u>filtered into subgroups of operational data;</u>

calculating evaluation criteria for a selected subgroup of operational data;

determining whether the evaluation criteria satisfy predetermined requirements;

if the evaluation criteria satisfy the predetermined requirements, processing the

workpiece using a process condition determined by the selected subgroup of operational

data; and

if the evaluation criteria do not satisfy the predetermined requirements, repeating

the method with a different selected subgroup of operational data.

2. (Original) The method of claim 1, wherein the step of processing the workpiece

comprises measuring the workpiece at a measuring step.

3. (Original) The method of claim 1, wherein the step of processing the workpiece

comprises not measuring the workpiece at a measuring step.

10/709,312   2

4. (Original) The method of claim 1, wherein the step of processing the workpiece comprises processing the workpiece on a process tool having a predetermined process capability for the workpiece.

5. (Original) The method of claim 1, comprising the further step of using a default process condition if all of the subgroups of operational data have been exhausted.

6. (Original) The method of claim 1, wherein the evaluation criteria comprises a normality value and a capability value.

10/709,312   3

7. (Currently Amended) A system for optimizing a manufacturing process, comprising:

a <u>historical</u> database of operational data gathered from previously performed

manufacturing processes;

a filtering system for filtering the <u>historical</u> database into a data subset;

a calculation system for calculating evaluation criteria for the data subset;

an iteration system that causes the filtering and calculation systems to be rerun for

a different data subset; and

a system for determining operating conditions of the manufacturing process based

on the calculated evaluation criteria.

8. (Original) The system of claim 7, further comprising an analysis system for

determining if the evaluation criteria meets a set of predetermined requirements.

9. (Original) The system of claim 8, wherein the iteration system is rerun if the selected

data subset fails to provide evaluation criteria that meets the set of predetermined

requirements.

10. (Original) The system of claim 7, wherein the evaluation criteria includes a

capability ratio and a normality value.

11. (Original) The system of claim 10, wherein the evaluation criteria further comprises

a sample size.

10/709,312   4

12. (Original) The system of claim 7, wherein the manufacturing process comprises a
metrology operation for taking measurements of a semiconductor.

13. (Original) The system of claim 12, wherein the analysis system implements a skip lot
sampling optimization if the evaluation criteria meet the set of predetermined
requirements.

14. (Original) The system of claim 7, wherein the operating conditions comprise
selecting a tool set to deploy for the manufacturing process.

15. (Original) The system of claim 7, wherein the filtering system includes a set of filters
that filter on parameters that include: semiconductor technology and level; semiconductor
part number and level; semiconductor technology, tool and level; and semiconductor part
number, tool and level.

10/709,312   5

16. (Currently Amended) A program product stored on a recordable medium for optimizing a manufacturing process, comprising:

   means for filtering a <u>historical</u> database of operational data gathered from previously performed manufacturing processes into a plurality of data subsets;

   means for calculating evaluation criteria for a selected data subset;

   means for determining if the evaluation criteria meet a set of predetermined requirements; and

   means for repeating the calculating and determining processes for a new data subset if the selected data subset fails to provide evaluation criteria that meet the set of predetermined requirements.

17. (Original) The program product of claim 16, wherein the evaluation criteria includes a capability ratio and a normality value.

18. (Original) The program product of claim 17, wherein the evaluation criteria further comprises a sample size.

19. (Original) The program product of claim 16, wherein the manufacturing process comprises a metrology operation for taking measurements of a semiconductor.

20. (Original) The program product of claim 19, wherein the determining means implements a skip lot sampling optimization if the evaluation criteria meet the set of predetermined requirements.

10/709,312   6

21. (Original) The program product of claim 16, wherein the manufacturing process comprises selecting a tool for deployment.

22. (Original) The program product of claim 20, wherein the repeating means is repeated for each of a plurality of data subsets for each of a plurality of candidate tools.

23. (Original) The program product of claim 16, wherein the means for filtering includes a set of filters that filter on parameters that include: semiconductor technology and level; semiconductor part number and level; semiconductor technology, tool and level; and semiconductor part number, tool and level.

24. (Currently Amended) A method of optimizing a manufacturing process, comprising:

providing a historical database of operational data gathered from previously

performed ~~semiconductor fabrication~~ manufacturing processes;

providing a set of filters that include operational parameters of ~~the~~ a current

~~metrology~~ manufacturing process;

filtering the historical database with a selected filter to generate a data subset;

calculating evaluation criteria for a selected data subset;

iterating the filtering and calculating steps for different data subsets; and

determining operating conditions of the current manufacturing process based on

the calculated evaluation criteria.

25. (Original) The method of claim 24, further comprising the step of, after the

calculating step, determining if the evaluation criteria meets a set of predetermined

requirements.

26. (Original) The method of claim 25, wherein the iterating steps includes selecting a

new filter from the set of filters if the evaluation criteria fails to meet the set of

predetermined requirements.

27. (Original) The method of claim 24, including the further step of using skip lot

sampling if the evaluation criteria meet the set of predetermined requirements.

10/709,312   8

28. (Original) The method of claim 24, including the further step of implementing a metrology process if none of the set of filters provides evaluation criteria that meet the set of predetermined requirements.

29. (Original) The method of claim 24, wherein the evaluation criteria comprises a capability ratio and a normality value.